

# Temporary Stream Crossings for Forestry



## A Directory of Available Structures

### Why Use a Temporary Stream Crossing Structure?

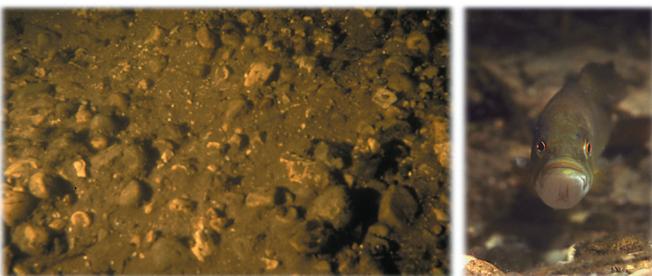
In many timber harvesting situations, it may be necessary for harvesting equipment to cross a stream in order to complete the planned timber harvest. Generally, the best way to cross a stream is to construct a stream crossing. The most common types of stream crossings include bridges, culverts and fords. Many landowner and loggers, however, are finding temporary stream crossings preferable to the more traditional types of crossings.

One reason people are turning to temporary stream crossing structures is because of the direct and indirect effects stream crossing can have on fisheries and water quality. Direct effects may include modification/destruction of habitat due to filling, channel changes and dredging. Indirect effects result from vegetation removal, grading, and land clearing that may lead to erosion and sedimentation in the waterway.



*Temporary skidder bridges, such as this one, can be installed without soil backfill or modifications to the stream banks.*

These effects may be minimized with the use of properly designed and installed temporary stream crossings. Temporary stream crossings can be installed without soil backfill or modifications to stream banks, reducing any effects on water quality and wildlife habitat. Following removal of the temporary stream crossings, stream banks are revegetated, if needed, to prevent erosion. Compared to permanent stream crossings, temporary stream crossings are generally preferred, if feasible, in order to limit the duration and magnitude of potential effects to a stream.



*Sediment washing into streams can cover and destroy fish spawning beds.*



Temporary stream crossings may also be preferable from an economic standpoint. The construction, installation, and maintenance of a permanent crossing structure is generally not cost effective for forestry activities. Temporary stream crossing structures are generally inexpensive and can be used in a variety of circumstances. There are several other benefits of temporary stream crossing structures, including:

- Cheaper permit fee than culverts.
- Relatively inexpensive and easy to construct.
- Relatively easy to install, remove, and transport.
- Can be used over and over in various applications.
- Can be constructed in a variety of lengths, widths and carrying capacities.
- Tend to have a long service life and require little maintenance.
- Can span a stream without inhibiting streamflow or aquatic movement.
- Can be installed without extensive soil backfill.
- Minimize stream siltation.
- Minimize erosion.
- Keep streams clear of slash and other debris.



*This timber bridge can support fully loaded logging trucks.*

**Portable bridges** include hinged bridges, modular steel bridge and prestressed concrete panels. These can span wider streams than the other two types of temporary stream crossing structures. They are also more expensive and can be more difficult to transport and set-up.

**Timber mats** or timber bridges can be made of trees felled on-site (log stringer bridges), lumber (solid-sawn stringer bridges) or laminated lumber (panel bridges). Timber mats and bridges can be more manageable than portable bridges.

**Pole fords** are generally constructed of PVC (polyvinyl chloride) or HDPE (high-density polyethylene) pipes. The pipes are cabled together to form mats and then placed on top of geotextile cloth. Timber mats or wood panels can be placed over the pipes to add stability and traction. Pole fords are easy to construct and can be reused.

### Common Types of Temporary Stream Crossing Structures

Temporary stream crossing structures fall into three general categories – portable bridges, timber mats and pole fords. Each has its advantages and disadvantages, depending on your situation. Information on structural characteristics and engineering specifications can be found in the resources listed later in this document. A licensed engineer can also help to design a safe stream crossing structure that fits your needs.



*To help stabilize pole fords, wood panels can be placed over the poles. With the wood panels in place, this pole ford can support a processor.*

## Forestry Best Management Practices for Water Quality

Always be sure to follow Forestry Best Management Practices (BMPs) when planning, designing, constructing and using a stream crossing structure. Using BMPs can help to limit any erosion or sedimentation associated with the stream crossing. For stream crossings, BMPs include:

- Design, construct, and maintain stream crossings to avoid disrupting the migration and movement of fish and/or other aquatic organisms.
- Install stream crossings using materials that are clean, non-erodible, and non-toxic to aquatic life.
- Install stream crossing structures at right angles to the stream channel.
- Minimize channel changes and the amount of excavation or fill needed at the crossing.
- Limit construction activity to periods of low or normal flow. Keep use of equipment in the stream to a minimum.
- Anchor temporary structures so they do not float away during high water.
- Stabilize approaches with aggregate or other suitable material.
- Use soil stabilization practices on exposed soil at stream crossings. Maintain these practices until the soil is permanently stabilized.
- Divert road drainage into undisturbed vegetation outside of the Riparian Management Zone (RMZ) so that drainage does not directly enter the stream.
- Construct bridge higher than the road approach to prevent surface road runoff from draining onto the crossing structure and into the stream.



*Temporary bridges should be anchored to a tree or similar object to prevent the bridge from washing downstream during floods.*

## Permits

A permit from the Wisconsin DNR is required when crossing a navigable waterway. A waterway is navigable if:

- it has a defined bed and banks, and
- it is possible to float a canoe or other small recreational craft in the waterway on a regular reoccurring basis – even if only during spring runoff.

Portable bridges and timber mats generally qualify for clear span bridge general permits. Pole fords are eligible for temporary in-stream crossing general permits. Check the DNR website at: <http://www.dnr.wi.gov/org/water/fhp/waterway/> for more information on permit standards and for permit applications. Contact information for local DNR Water Management Specialists is also available on that web-page.

## Directory

The following pages include a listing of the agencies in Wisconsin which have temporary stream crossing structures available for use or loan. Please contact the agencies for more information.

Agency	Contact	Address/Phone/Email	Structure	Rental Policy	Cost	Location
<b>Brule River State Forest</b>	Dave Schulz	6250 South Ranger Road Brule, WI 54820 (715) 372-5678 david.schulz@wisconsin.gov	6 timber mats	--	--	Available to loggers and foresters in the Superior area. Stored at the BRSF
<b>Flambeau River State Forest</b>	Jim Halvorson	W1613 County Road W Winter, WI 54896 (715) 332-5271 james.halvorson@wisconsin.gov	10 timber mats	--	--	For use on the FRSF or Rusk, Price, and Sawyer county forests.
<b>Florence County Land Conservation Department</b>	Margie Yadro	P.O. Box 107 Florence, WI 54121 (715) 528-5940 myadro@co.florence.wi.us	20' portable timber bridge	Must enter into a rental agreement with the County. Must furnish a certificate of insurance for liability (\$1,000,000) for bodily injury/property damage and workers compensation insurance.	\$50/month plus tax \$500 deposit required	Can be used statewide.
<b>Forest County Land Conservation Department</b>	Cindy Gretzinger	Courthouse 200 East Madison Street Crandon, WI 54520 (715) 478-7796 cindy.gretzinger@ces.uwex.edu	15' portable timber bridge	Must enter into a rental agreement with the County. Must furnish a certificate of insurance for liability (\$1,000,000) for bodily injury/property damage and workers compensation insurance.	\$50/month plus tax \$500 deposit required	May be used in Florence, Forest, Langlade, Lincoln, Marinette, Menominee, Oconto, Oneida, Shawano, and Vilas counties.
<b>Iron County Forestry Department</b>	Angelo Aimone	ICF 607 3rd Avenue North #2 Hurley, WI 54534 (715) 561-2697 icf@ironcountywi.org	One pair 6' X 20' box style stringer modules	Contractor must haul, place, deck, remove and return module.	--	Use restricted to Iron County, but may be used on private lands.

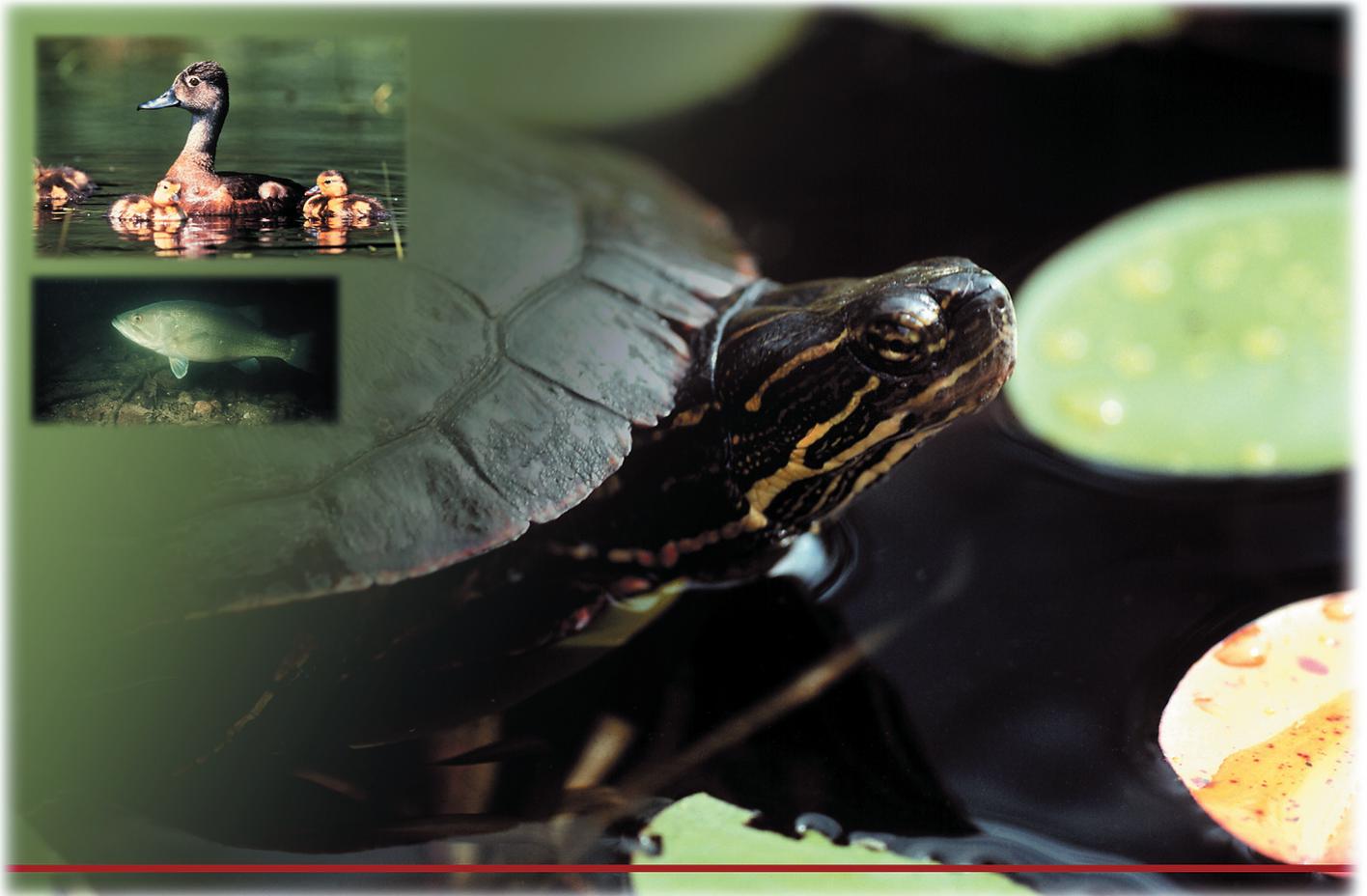
Agency	Contact	Address/Phone/Email	Structure	Rental Policy	Cost	Location
<b>Marinette County Forestry Department</b>	John Neilio	1926 Hall Avenue Marinette, WI 54145 (715) 732-7525 jneilio@marinettecounty.com	9' X 14' skidder bridge 12' X 24' skidder bridge 12' X 30' truck bridge (80,000 lbs)	Cost will vary based on whether the bridge is picked up or delivered and set-up.	9' X 14' skidder bridge - \$300 12' X 24' skidder bridge - \$400 12' X 30' truck bridge - \$750	Use restricted to Marinette County, but may be used on private lands that have state permitted crossings for logging.
<b>Oneida County Land &amp; Water Conservation Department</b>	Nancy Hollands	PO Box 400 One Courthouse Square Rhinelander, WI 54501-0400 (715) 369-7838 nhollands@co.oneida.wi.us	25' portable timber bridge	Must enter into a rental agreement with the County. Must furnish a certificate of insurance for liability (\$1,000,000) for bodily injury/property damage and workers compensation insurance.	\$50/month plus tax \$500 deposit required	May be used in Oneida and surrounding counties.
<b>Southwest Badger Resource Conservation &amp; Development Council</b>	Steve Bertjens	150 West Alona Lane Lancaster, WI 53813 (608) 723-6377 steve.bertjens@wi.usda.gov	3 PVC bundles 10' in length. Enough wood decking for a 10' crossing.	--	\$200 deposit required. Fully refunded if crossing returned undamaged.	Stored at the Lancaster Field Office. May be used in Crawford, Grant, Green, Iowa, LaCrosse, Lafayette, Richland, Sauk, and Vernon counties.
<b>Wisconsin DNR Tower Hill State Park</b>	Steve Williamson	5808 County Highway C Spring Green WI 53588 (608) 588-2591 ext. 201 steve.williamson@wisconsin.gov	6 sections of wood planks (8' X 12') 7 bundles of PVC pipes geotextile fabric 1 used culvert	Loggers must pick up, install, and return bridges. DNR staff can provide directions and visit sites to assist with proper installation.	--	Stored in Spring Green area. May be used in Iowa, Sauk, Richland, Columbia, and Grant counties (DNR south central region) on private and state lands.



*Permits require the streambanks to be stabilized when the crossing is removed. At this crossing, excelsior erosion control mats were used to hold the seed mix and soil in place.*

## **Additional Sources of Information**

- Forest Management Practices: Crossing Options – University of Minnesota Extension Service, Publications 1 – 16 <http://dnr.wi.gov/org/land/forestry/Usesof/bmp/bmpownerguides.htm#4>
- Portable Timber Bridges as a Best Management Practice in Forest Management – Forest Service, National Wood in Transportation Information Center, NA-TP-04-04 <http://www.fs.fed.us/na/wit/>
- Portable Timber Bridges: An Eco-friendly Solution for Stream Crossings – Forest Service, National Wood in Transportation Information Center, NA-TP-01-97
- Temporary Stream and Wetland Crossing Options for Forest Management – Forest Service, North Central Research Station, General Technical Report NC-202 <http://www.ncrs.fs.fed.us/epubs/gtr202/index.html>
- Wisconsin's Forestry Best Management Practices for Water Quality: A Field Manual for Loggers, Landowners and Land Managers – Wisconsin Department of Natural Resources, Pub-FR-093 2003 <http://dnr.wi.gov/org/land/forestry/Usesof/bmp/bmpfieldmanual.htm>



The purpose of this publication is to inform, not to advise. It is recommended that you seek professionals knowledgeable about the specifics of your woodland and applicable regulations prior to implementing any forest management activities on your property.

This publication is available from Wisconsin Department of Natural Resources, Division of Forestry, PO Box 7921, Madison, WI, 53707.

For additional information, call (608) 267-7494 or visit our web-site at: [www.dnr.wi.gov/org/land/forestry](http://www.dnr.wi.gov/org/land/forestry)

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